

=> d his ful

(FILE 'HOME' ENTERED AT 14:45:59 ON 24 NOV 2009)

FILE 'HCAPLUS' ENTERED AT 14:47:12 ON 24 NOV 2009

L1 1 SEA SPE=ON ABB=ON PLU=ON US20070280871/PN
 D L1 ALL

FILE 'WPIX' ENTERED AT 14:47:38 ON 24 NOV 2009

L2 1 SEA SPE=ON ABB=ON PLU=ON US20070280871/PN
 D L2 FULL

FILE 'ZCAPLUS' ENTERED AT 14:53:27 ON 24 NOV 2009

L3 QUE SPE=ON ABB=ON PLU=ON SILICA# OR SIO2 OR SILICON#
 (W) (OXIDE# OR DIOXIDE#)
L4 QUE SPE=ON ABB=ON PLU=ON EXTRACT? OR REMOV? OR
 ISOLAT? OR SEPARAT? OF PURIF?
L5 QUE SPE=ON ABB=ON PLU=ON (LEAD# OR PB#) (2W) ACID#

FILE 'JAPIO, PASCAL, ENERGY, RAPRA, EMA, COMPENDEX, INSPEC, WPIX,
HCAPLUS' ENTERED AT 15:07:03 ON 24 NOV 2009

FILE 'ZCAPLUS' ENTERED AT 15:07:06 ON 24 NOV 2009

L6 QUE SPE=ON ABB=ON PLU=ON L3 (3A) L4

FILE 'JAPIO, PASCAL, ENERGY, RAPRA, EMA, COMPENDEX, INSPEC, WPIX,
HCAPLUS' ENTERED AT 15:07:26 ON 24 NOV 2009

L7 2042 SEA SPE=ON ABB=ON PLU=ON L3 (3A) L4
L8 1370 SEA SPE=ON ABB=ON PLU=ON L3 (3A) L4
L9 696 SEA SPE=ON ABB=ON PLU=ON L3 (3A) L4
L10 96 SEA SPE=ON ABB=ON PLU=ON L3 (3A) L4
L11 270 SEA SPE=ON ABB=ON PLU=ON L3 (3A) L4
L12 1850 SEA SPE=ON ABB=ON PLU=ON L3 (3A) L4
L13 1633 SEA SPE=ON ABB=ON PLU=ON L3 (3A) L4
L14 6558 SEA SPE=ON ABB=ON PLU=ON L3 (3A) L4
L15 20494 SEA SPE=ON ABB=ON PLU=ON L3 (3A) L4

TOTAL FOR ALL FILES

L16 35009 SEA SPE=ON ABB=ON PLU=ON L6
 D L16 KWIC

L17 4659 SEA SPE=ON ABB=ON PLU=ON (LEAD# OR PB#) (2W) ACID#
L18 2017 SEA SPE=ON ABB=ON PLU=ON (LEAD# OR PB#) (2W) ACID#
L19 6441 SEA SPE=ON ABB=ON PLU=ON (LEAD# OR PB#) (2W) ACID#
L20 102 SEA SPE=ON ABB=ON PLU=ON (LEAD# OR PB#) (2W) ACID#
L21 107 SEA SPE=ON ABB=ON PLU=ON (LEAD# OR PB#) (2W) ACID#

L22 4356 SEA SPE=ON ABB=ON PLU=ON (LEAD# OR PB#) (2W) ACID#
 L23 4869 SEA SPE=ON ABB=ON PLU=ON (LEAD# OR PB#) (2W) ACID#
 L24 6128 SEA SPE=ON ABB=ON PLU=ON (LEAD#/BI, ABEX OR PB#/BI, ABEX
) (2W) ACID#/BI, ABEX

L25 16564 SEA SPE=ON ABB=ON PLU=ON (LEAD# OR PB#) (2W) ACID#

TOTAL FOR ALL FILES

L26 45243 SEA SPE=ON ABB=ON PLU=ON L5
 L27 3 SEA SPE=ON ABB=ON PLU=ON L17 AND L7
 L28 0 SEA SPE=ON ABB=ON PLU=ON L18 AND L8
 L29 0 SEA SPE=ON ABB=ON PLU=ON L19 AND L9
 L30 0 SEA SPE=ON ABB=ON PLU=ON L20 AND L10
 L31 0 SEA SPE=ON ABB=ON PLU=ON L21 AND L11
 L32 0 SEA SPE=ON ABB=ON PLU=ON L22 AND L12
 L33 1 SEA SPE=ON ABB=ON PLU=ON L23 AND L13
 L34 4 SEA SPE=ON ABB=ON PLU=ON L24 AND L14
 L35 3 SEA SPE=ON ABB=ON PLU=ON L25 AND L15

TOTAL FOR ALL FILES

L36 11 SEA SPE=ON ABB=ON PLU=ON L26 AND L16
 D L36 1-11 KWIC

FILE 'ZCAPLUS' ENTERED AT 15:10:41 ON 24 NOV 2009

L37 QUE SPE=ON ABB=ON PLU=ON BATTERY# OR BATTERIES#

FILE 'JAPIO, PASCAL, ENERGY, RAPRA, EMA, COMPENDEX, INSPEC, WPIX,
 HCAPLUS' ENTERED AT 15:11:19 ON 24 NOV 2009

L38 3 SEA SPE=ON ABB=ON PLU=ON L37 AND L27
 L39 0 SEA SPE=ON ABB=ON PLU=ON L37 AND L28
 L40 0 SEA SPE=ON ABB=ON PLU=ON L37 AND L29
 L41 0 SEA SPE=ON ABB=ON PLU=ON L37 AND L30
 L42 0 SEA SPE=ON ABB=ON PLU=ON L37 AND L31
 L43 0 SEA SPE=ON ABB=ON PLU=ON L37 AND L32
 L44 0 SEA SPE=ON ABB=ON PLU=ON L37 AND L33
 L45 0 SEA SPE=ON ABB=ON PLU=ON L37 AND L34
 L46 1 SEA SPE=ON ABB=ON PLU=ON L37 AND L35

TOTAL FOR ALL FILES

L47 4 SEA SPE=ON ABB=ON PLU=ON L37 AND L36

L48 QUE SPE=ON ABB=ON PLU=ON RECOVER?

L49 QUE SPE=ON ABB=ON PLU=ON L48 (3A) L3

L50 QUE SPE=ON ABB=ON PLU=ON L49 AND L5 AND L37

FILE 'JAPIO, PASCAL, ENERGY, RAPRA, EMA, COMPENDEX, INSPEC, WPIX,
 HCAPLUS' ENTERED AT 15:13:03 ON 24 NOV 2009

L51 0 SEA SPE=ON ABB=ON PLU=ON L49 AND L5 AND L37
 L52 0 SEA SPE=ON ABB=ON PLU=ON L49 AND L5 AND L37
 L53 0 SEA SPE=ON ABB=ON PLU=ON L49 AND L5 AND L37

L54	0	SEA	SPE=ON	ABB=ON	PLU=ON	L49 AND L5 AND L37
L55	0	SEA	SPE=ON	ABB=ON	PLU=ON	L49 AND L5 AND L37
L56	0	SEA	SPE=ON	ABB=ON	PLU=ON	L49 AND L5 AND L37
L57	0	SEA	SPE=ON	ABB=ON	PLU=ON	L49 AND L5 AND L37
L58	0	SEA	SPE=ON	ABB=ON	PLU=ON	L49 AND L5 AND L37
L59	1	SEA	SPE=ON	ABB=ON	PLU=ON	L49 AND L5 AND L37

TOTAL FOR ALL FILES

L60	1	SEA	SPE=ON	ABB=ON	PLU=ON	L50
						D L60 KWIC
L61	3	SEA	SPE=ON	ABB=ON	PLU=ON	L51 OR L38
L62	0	SEA	SPE=ON	ABB=ON	PLU=ON	L52 OR L39
L63	0	SEA	SPE=ON	ABB=ON	PLU=ON	L53 OR L40
L64	0	SEA	SPE=ON	ABB=ON	PLU=ON	L54 OR L41
L65	0	SEA	SPE=ON	ABB=ON	PLU=ON	L55 OR L42
L66	0	SEA	SPE=ON	ABB=ON	PLU=ON	L56 OR L43
L67	0	SEA	SPE=ON	ABB=ON	PLU=ON	L57 OR L44
L68	0	SEA	SPE=ON	ABB=ON	PLU=ON	L58 OR L45
L69	2	SEA	SPE=ON	ABB=ON	PLU=ON	L59 OR L46

TOTAL FOR ALL FILES

L70	5	SEA	SPE=ON	ABB=ON	PLU=ON	L60 OR L47
						D L61 1-3 KWIC

FILE 'ZCAPLUS' ENTERED AT 15:16:06 ON 24 NOV 2009

L71		QUE	SPE=ON	ABB=ON	PLU=ON	L6 OR L49
L72		QUE	SPE=ON	ABB=ON	PLU=ON	L71 AND L37

FILE 'JAPIO, PASCAL, ENERGY, RAPRA, EMA, COMPENDEX, INSPEC, WPIX, HCAPLUS' ENTERED AT 15:16:53 ON 24 NOV 2009

L73	7	SEA	SPE=ON	ABB=ON	PLU=ON	L71 AND L37
L74	4	SEA	SPE=ON	ABB=ON	PLU=ON	L71 AND L37
L75	4	SEA	SPE=ON	ABB=ON	PLU=ON	L71 AND L37
L76	1	SEA	SPE=ON	ABB=ON	PLU=ON	L71 AND L37
L77	0	SEA	SPE=ON	ABB=ON	PLU=ON	L71 AND L37
L78	21	SEA	SPE=ON	ABB=ON	PLU=ON	L71 AND L37
L79	3	SEA	SPE=ON	ABB=ON	PLU=ON	L71 AND L37
L80	42	SEA	SPE=ON	ABB=ON	PLU=ON	L71 AND L37
L81	67	SEA	SPE=ON	ABB=ON	PLU=ON	L71 AND L37

TOTAL FOR ALL FILES

L82	149	SEA	SPE=ON	ABB=ON	PLU=ON	L72
						D L81 1-6 KWIC

L83	134	DUP REMOV	L82 (15 DUPLICATES REMOVED)			
			ANSWERS '1-7' FROM FILE JAPIO			
			ANSWERS '8-11' FROM FILE PASCAL			
			ANSWERS '12-15' FROM FILE ENERGY			
			ANSWER '16' FROM FILE RAPRA			
			ANSWERS '17-33' FROM FILE COMPENDEX			
			ANSWERS '34-35' FROM FILE INSPEC			

ANSWERS '36-77' FROM FILE WPIX
ANSWERS '78-134' FROM FILE HCAPLUS
D L83 78-85 KWIC

FILE 'ZCAPLUS' ENTERED AT 15:24:39 ON 24 NOV 2009

L84 QUE SPE=ON ABB=ON PLU=ON WASHING# OR RINSING# OR
PYROLYSIS#

L85 QUE SPE=ON ABB=ON PLU=ON REMEDIAT? OR POLLUTION# OR
LANDFILL# OR LAND#(W)FILL# OR WASTE#(2A)RECOVERY#

FILE 'JAPIO, PASCAL, ENERGY, RAPRA, EMA, COMPENDEX, INSPEC, WPIX,
HCAPLUS' ENTERED AT 15:26:00 ON 24 NOV 2009

L86 7 SEA L83

L87 0 SEA SPE=ON ABB=ON PLU=ON L86 AND L84

L88 4 SEA L83

L89 0 SEA SPE=ON ABB=ON PLU=ON L88 AND L84

L90 4 SEA L83

L91 0 SEA SPE=ON ABB=ON PLU=ON L90 AND L84

L92 1 SEA L83

L93 0 SEA SPE=ON ABB=ON PLU=ON L92 AND L84

L94 0 SEA L83

L95 0 SEA SPE=ON ABB=ON PLU=ON L94 AND L84

L96 17 SEA L83

L97 2 SEA SPE=ON ABB=ON PLU=ON L96 AND L84

L98 2 SEA L83

L99 0 SEA SPE=ON ABB=ON PLU=ON L98 AND L84

L100 42 SEA L83

L101 1 SEA SPE=ON ABB=ON PLU=ON L100 AND L84

L102 57 SEA L83

L103 5 SEA SPE=ON ABB=ON PLU=ON L102 AND L84

TOTAL FOR ALL FILES

L104 8 SEA SPE=ON ABB=ON PLU=ON L83 AND L84

L105 7 SEA L83

L106 0 SEA SPE=ON ABB=ON PLU=ON L105 AND L85

L107 4 SEA L83

L108 0 SEA SPE=ON ABB=ON PLU=ON L107 AND L85

L109	4	SEA	L83				
L110	0	SEA	SPE=ON	ABB=ON	PLU=ON	L109 AND	L85
L111	1	SEA	L83				
L112	0	SEA	SPE=ON	ABB=ON	PLU=ON	L111 AND	L85
L113	0	SEA	L83				
L114	0	SEA	SPE=ON	ABB=ON	PLU=ON	L113 AND	L85
L115	17	SEA	L83				
L116	1	SEA	SPE=ON	ABB=ON	PLU=ON	L115 AND	L85
L117	2	SEA	L83				
L118	0	SEA	SPE=ON	ABB=ON	PLU=ON	L117 AND	L85
L119	42	SEA	L83				
L120	0	SEA	SPE=ON	ABB=ON	PLU=ON	L119 AND	L85
L121	57	SEA	L83				
L122	4	SEA	SPE=ON	ABB=ON	PLU=ON	L121 AND	L85
TOTAL FOR ALL FILES							
L123	5	SEA	SPE=ON	ABB=ON	PLU=ON	L83 AND	L85
		D	L123	1-5	KWIC		

FILE 'ZCAPLUS' ENTERED AT 15:27:19 ON 24 NOV 2009

L124	QUE	SPE=ON	ABB=ON	PLU=ON	WASTE# (2W)	MANAGEMENT#
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FILE 'JAPIO, PASCAL, ENERGY, RAPRA, EMA, COMPENDEX, INSPEC, WPIX, HCAPLUS' ENTERED AT 15:28:09 ON 24 NOV 2009

L125	7	SEA	L83				
L126	0	SEA	SPE=ON	ABB=ON	PLU=ON	L125 AND	L124
L127	4	SEA	L83				
L128	0	SEA	SPE=ON	ABB=ON	PLU=ON	L127 AND	L124
L129	4	SEA	L83				
L130	0	SEA	SPE=ON	ABB=ON	PLU=ON	L129 AND	L124
L131	1	SEA	L83				
L132	0	SEA	SPE=ON	ABB=ON	PLU=ON	L131 AND	L124
L133	0	SEA	L83				
L134	0	SEA	SPE=ON	ABB=ON	PLU=ON	L133 AND	L124
L135	17	SEA	L83				

L136	0	SEA	SPE=ON	ABB=ON	PLU=ON	L135 AND L124
L137	2	SEA	L83			
L138	0	SEA	SPE=ON	ABB=ON	PLU=ON	L137 AND L124
L139	42	SEA	L83			
L140	0	SEA	SPE=ON	ABB=ON	PLU=ON	L139 AND L124
L141	57	SEA	L83			
L142	1	SEA	SPE=ON	ABB=ON	PLU=ON	L141 AND L124
TOTAL FOR ALL FILES						
L143	1	SEA	SPE=ON	ABB=ON	PLU=ON	L83 AND L124
L144	0	SEA	SPE=ON	ABB=ON	PLU=ON	L126 OR L106
L145	0	SEA	SPE=ON	ABB=ON	PLU=ON	L128 OR L108
L146	0	SEA	SPE=ON	ABB=ON	PLU=ON	L130 OR L110
L147	0	SEA	SPE=ON	ABB=ON	PLU=ON	L132 OR L112
L148	0	SEA	SPE=ON	ABB=ON	PLU=ON	L134 OR L114
L149	1	SEA	SPE=ON	ABB=ON	PLU=ON	L136 OR L116
L150	0	SEA	SPE=ON	ABB=ON	PLU=ON	L138 OR L118
L151	0	SEA	SPE=ON	ABB=ON	PLU=ON	L140 OR L120
L152	4	SEA	SPE=ON	ABB=ON	PLU=ON	L142 OR L122
TOTAL FOR ALL FILES						
L153	5	SEA	SPE=ON	ABB=ON	PLU=ON	L143 OR L123
L154	5	DUP	REMOV	L70	(0	DUPLICATES REMOVED)
				ANSWERS	'1-3'	FROM FILE JAPIO
				ANSWERS	'4-5'	FROM FILE HCAPLUS
L155	8	DUP	REMOV	L104	(0	DUPLICATES REMOVED)
				ANSWERS	'1-2'	FROM FILE COMPENDEX
				ANSWER	'3'	FROM FILE WPIX
				ANSWERS	'4-8'	FROM FILE HCAPLUS
L156	5	DUP	REMOV	L153	(0	DUPLICATES REMOVED)
				ANSWER	'1'	FROM FILE COMPENDEX
				ANSWERS	'2-5'	FROM FILE HCAPLUS

FILE HOME

FILE HCAPLUS

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FILE COVERS 1907 - 24 Nov 2009 VOL 151 ISS 22
FILE LAST UPDATED: 23 Nov 2009 (20091123/ED)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Aug 2009
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Aug 2009

HCPlus now includes complete International Patent Classification (I
reclassification data for the third quarter of 2009.

CAS Information Use Policies apply and are available at:

<http://www.cas.org/legal/infopolicy.html>

This file contains CAS Registry Numbers for easy and accurate
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FILE WPIX
FILE LAST UPDATED: 20 NOV 2009 <20091120/UP>
MOST RECENT UPDATE: 200975 <200975/DW>
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE
>>> Now containing more than 1.4 million chemical structures in DCR

>>> IPC, ECLA, US National Classifications and Japanese F-Terms
and FI-Terms have been updated with reclassifications to
end of September 2009.
No update date (UP) has been created for the reclassified
documents, but they can be identified by
specific update codes (see HELP CLA for details) <<<

FOR A COPY OF THE DERWENT WORLD PATENTS INDEX STN USER GUIDE,
PLEASE VISIT:
http://www.stn-international.com/stn_guide.html

FOR DETAILS OF THE PATENTS COVERED IN CURRENT UPDATES, SEE
<http://scientific.thomsonreuters.com/support/patents/coverage/latest>

EXPLORE DERWENT WORLD PATENTS INDEX IN STN ANAVIST, VERSION 2.0:
http://www.stn-international.com/DWPIAnaVist2_0608.html

>>> HELP for European Patent Classifications see HELP ECLA, HELP ICO

>>> Japanese FI-TERM thesaurus in field /FCL added --> see NEWS <<<

FILE ZCAPLUS

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FILE COVERS 1907 - 24 Nov 2009 VOL 151 ISS 22

FILE LAST UPDATED: 23 Nov 2009 (20091123/ED)

REVISED CLASS FIELDS (/NCL) LAST RELOADED: Aug 2009

USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Aug 2009

ZCAplus now includes complete International Patent Classification (IPC) reclassification data for the third quarter of 2009.

CAS Information Use Policies apply and are available at:

<http://www.cas.org/legal/infopolicy.html>

This file contains CAS Registry Numbers for easy and accurate substance identification.

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FILE JAPIO

FILE LAST UPDATED: 9 NOV 2009 <20091109/UP>

MOST RECENT PUBLICATION DATE: 30 JUL 2009 <20090730/PD>

>>> GRAPHIC IMAGES AVAILABLE <<<

>>> SIMULTANEOUS LEFT AND RIGHT TRUNCATION (SLART) IS AVAILABLE
IN THE BASIC INDEX (/BI) FIELD <<<

FILE PASCAL

FILE LAST UPDATED: 23 NOV 2009 <20091123/UP>

FILE COVERS 1977 TO DATE.

>>> SIMULTANEOUS LEFT AND RIGHT TRUNCATION IS AVAILABLE

IN THE BASIC INDEX (/BI) FIELD <<<

FILE ENERGY

FILE LAST UPDATED: 6 NOV 2009 <20091106/UP>

FILE COVERS 1974 TO DATE.

<<< SIMULTANEOUS LEFT AND RIGHT TRUNCATION AVAILABLE IN
THE BASIC INDEX >>>

<<< ENERGY WILL NO LONGER BE AVAILABLE TO CUSTOMERS FROM
UNITED KINGDOM AS OF JANUARY 1, 2010 --> SEE NEWS >>>

FILE RAPRA

FILE LAST UPDATED: 19 NOV 2009 <20091119/UP>

FILE COVERS 1972 TO DATE

>>> Simultaneous left and right truncation is available in the
basic index (/BI), and in the controlled term (/CT),
geographical term (/GT), and non-polymer term (/NPT) fields. <<<

>>> The RAPRA Classification Code is available as a PDF file

>>> and may be downloaded free-of-charge from:

>>> http://www.stn-international.de/rapra_classcodes.html <<<

FILE EMA

FILE LAST UPDATED: 24 NOV 2009 <20091124/UP>

FILE COVERS 1986 TO DATE.

>>> EMA will load additionally newly included old documents.
If you are not interested in retrieving these older documents
we recommend to modify your SDI by excluding them by publication
year (PY). E.G. => NOT PY<XXXX <<<

FILE COMPENDEX

FILE LAST UPDATED: 23 NOV 2009 <20091123/UP>

FILE COVERS 1970 TO DATE.

<<< SIMULTANEOUS LEFT AND RIGHT TRUNCATION IS AVAILABLE IN
THE BASIC INDEX (/BI), ABSTRACT (/AB), and TITLE (/TI) FIELDS >

<<< Reloaded and enhanced COMPENDEX file is now available
- see 'HELP RLOAD' for details <<<

FILE INSPEC

FILE LAST UPDATED: 20 NOV 2009 <20091120/UP>

FILE COVERS 1898 TO DATE.

<<< SIMULTANEOUS LEFT AND RIGHT TRUNCATION AVAILABLE IN
THE ABSTRACT (/AB), BASIC INDEX (/BI) AND TITLE (/TI) FIELDS >>

=> d 1154 1-3 bib abs ind

L154 ANSWER 1 OF 5 JAPIO (C) 2009 JPO on STN
AN 1995-029560 JAPIO Full-text
TI SEPARATOR FOR SEALED **LEAD-ACID BATTERY**
IN MUTOU JIYUNSUKE; HOSONO HIROAKI
PA NIPPON SHEET GLASS CO LTD
PI JP 07029560 A 19950131 Heisei
AI JP 1993-171521 (JP05171521 Heisei) 19930712
PRAI JP 1993-171521 19930712
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol.
1995
AN 1995-029560 JAPIO Full-text
AB PURPOSE: To provide a separator for a sealed lead- acid battery by
which high pressure force can be maintained in the battery.
CONSTITUTION: In a separator mainly composed of glass fiber, the
separator for a sealed lead-acid battery is formed by mixing the
glass fiber, silica powder and silica sol extractively. Thereby, only
under the coexistence of the silica power and the silica sol, an
excellent gel condition is formed in the separator in a drying
process after they are mixed extractively, and pressure force is
maintained by the expansive action. After electrolyte is injected,
the pressure force can be maintained sufficiently without reducing
the pressure force applied to a plate. The service life of the
battery can be lengthened significantly.
COPYRIGHT: (C)1995,JPO
IC ICM H01M002-16

L154 ANSWER 2 OF 5 JAPIO (C) 2009 JPO on STN
AN 1994-140046 JAPIO Full-text
TI SEALED **LEAD-ACID BATTERY**
IN SHIOMI MASA AKI
PA JAPAN STORAGE BATTERY CO LTD
PI JP 06140046 A 19940520 Heisei
AI JP 1992-309551 (JP04309551 Heisei) 19921023
PRAI JP 1992-309551 19921023
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol.
1994
AN 1994-140046 JAPIO Full-text
AB PURPOSE: To improve service life performance significantly.
CONSTITUTION: A clad type plate is used as a positive electrode
plate, and granule silica is filled and arranged between plates and
around a plate group. A necessary and sufficient quantity of sulfuric

acid electrolyte for discharge is impregnated in/held with the granule silica, an isolating body and positive and negative electrode plates, and a so-called granule type battery, or the sulfuric acid electrolyte is gelled by silica particulates. Silica powder is contained by 5% to 80% as a constituent of a tube for the clad type positive electrode plate. COPYRIGHT: (C)1994,JPO&Japio

IC ICM H01M004-76

L154 ANSWER 3 OF 5 JAPIO (C) 2009 JPO on STN

AN 1991-043955 JAPIO Full-text

TI MANUFACTURE OF SEPARATOR FOR LEAD-ACID
BATTERY

IN TAJIKA WATARU

PA JAPAN STORAGE BATTERY CO LTD

PI JP 03043955 A 19910225 Heisei

AI JP 1989-177401 (JP01177401 Heisei) 19890710

PRAI JP 1989-177401 19890710

SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol.
1991

AN 1991-043955 JAPIO Full-text

AB PURPOSE: To obtain a separator having high porosity, good electrolyte retention capability, and low electric resistance by molding a paste or puttylike material prepared by kneading inorganic material powder mainly comprising silica and a dispersion medium containing a small amount of binder in a specified shape, then removing the dispersion medium.

CONSTITUTION: A paste or puttylike mixture is prepared by kneading inorganic material powder mainly comprising silica and a dispersion medium containing a small amount of binder, and molded in a specified shape, then the dispersion medium is removed. For example, when silica powder having a particle size of 10-40 μ m is dispersed in water containing 0.5-2.0wt.% carboxymethylcellulose (CMC), the mixture shows a paste or putty-state in the region B where the ratio of silica powder is 10-30wt.%. The mixture within the region B is easily molded as a separator, and the separator obtained has good appearance and is easy to handle, and in addition has high porosity, good electrolyte retention capability, and low electric resistance similar to those of a separator made of very fine glass fibers.

COPYRIGHT: (C)1991,JPO&Japio

IC ICM H01M002-16

=> d 1154 4-5 bib abs hitind

L154 ANSWER 4 OF 5 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2005:962577 HCAPLUS Full-text

DN 143:253081

TI Process for **recovery** of the **silica** present in
the separators between the elements of **lead-acid**
batteries

IN Modica, Giovanni

PA Kandy S.A., Panama

SO PCT Int. Appl., 17 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	
PI	WO 2005081356	A1	20050901	WO 2005-IB291	20050203
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP	1721358	A1	20061115	EP 2005-702435	20050203
EP	1721358	B1	20071107		
	R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL, LV, MK				
CN	1930727	A	20070314	CN 2005-80008153	20050203
CN	100474691	C	20090401		
AT	377848	T	20071115	AT 2005-702435	20050203
ES	2297665	T3	20080501	ES 2005-702435	20050203
RU	2359370	C2	20090620	RU 2006-132400	20050203

US 20070280871 A1 20071206 US 2007-589282

200704
18

PRAI CH 2004-196 A 20040211
WO 2005-IB291 W 20050203

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB A process for **recovery** of the **silica** present in the separators located between the elements of **lead- acid batteries** characterized in that it comprises the following operations: a) washing the heavy plastics to remove the lead compds. and other foreign bodies, b) separating the plastics from the washing solution, c) lead recovery and regeneration of the washing solution, d) rinsing of the plastics, e) drying of the plastics, f) separation of the granular plastics from the thin plastics (polyethylene with silica filler, PVC, fabrics) by drawing them up in a flow of air making use of the shape effect, g) separation of the PVC and fabrics from the polyethylene with silica filler through fragmentation, h) pyrolysis of the polyethylene with silica filler, i) cracking of the pyrolysis gases and vapors in order to reduce their mol. weight and render them more suitable for handling and combustion to provide the heat necessary for pyrolysis, j) oxidation of the pyrolysis residue to remove carbonaceous residues and **recover** the **silica**, k) pyrolysis of the mixture of PVC and fabrics presence of alkaline substances, l) oxidation of the residue from the pyrolysis of PVC and fabrics with the production of inert ashes is described.

IC ICM H01M010-54
ICS C25B015-00; C01B033-113

CC 60-2 (Waste Treatment and Disposal)
Section cross-reference(s): 48, 49, 52

ST **silica recovery lead acid**
battery separator plastic pyrolysis

IT Plastics, uses
RL: NUU (Other use, unclassified); USES (Uses)
 (elements of **lead-acid batteries**)

IT Secondary **batteries**
Separators
 (**recovery** of **silica** present in separators
 between elements of **lead-acid**
 batteries)

IT Thermal decomposition
 (**recovery** of **silica** present in separators
 between elements of **lead-acid**
 batteries by)

IT Oxidation
 (**recovery** of **silica** present in separators
 between elements of **lead-acid**

batteries by oxidation of pyrolysis products)

IT 7439-92-1P, Lead, processes 7631-86-9P, Silica, processes

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PUR (Purification or recovery); PREP (Preparation); PROC (Process)

(recovery of silica present in separators between elements of lead-acid batteries)

IT 9002-86-2, PVC 9002-88-4, Polyethylene

RL: NUU (Other use, unclassified); USES (Uses)

(recovery of silica present in separators between elements of lead-acid batteries)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L154 ANSWER 5 OF 5 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 1997:151391 HCAPLUS Full-text

DN 126:174246

OREF 126:33613a,33616a

TI Lignin compound additives for lead acid batteries, their manufacture, and the batteries

IN Okamoto, Hiroki; Hara, Kenji

PA Shin Kobe Electric Machinery, Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	
PI	JP 09007630	A	19970110	JP 1995-159011	19950626

PRAI JP 1995-159011 19950626

AB The additives are lignin compds. having inferior components, containing functional groups that lowers the H overpotential, removed by precipitating with an alkaline solution, which does not lower the battery performance when exist in the battery anode or electrolyte. The additives are prepared by mixing the lignin compds. with the alkaline soln and removing the precipitate The alkaline solution is preferably colloidal SiO₂ or NaOH. The batteries contain the additives in their anodes or electrolytes.

IC ICM H01M010-08

ICS C07C043-20; C07C309-24

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lead **battery** lignin compd additive treatment; sodium hydroxide treatment lignin lead **battery**; colloidal silica treatment lignin lead **battery**

IT Secondary **batteries**
 (removal of hydrogen overvoltage lowering impurities from lignin additives for lead acid **batteries**)

IT 7631-86-9, **Silica**, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (colloidal; in removal of hydrogen overvoltage lowering impurities from lignin additives for lead acid **batteries**)

IT 1310-73-2, Sodium hydroxide, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (in removal of hydrogen overvoltage lowering impurities from lignin additives for lead acid **batteries**)

IT 8062-15-5P, Ligninsulfonic acid 9005-53-2DP, Lignin, derivs., uses
 RL: DEV (Device component use); PUR (Purification or recovery); PREP (Preparation); USES (Uses)
 (removal of hydrogen overvoltage lowering impurities from lignin additives for lead acid **batteries**)

=> d 1155 1-2 bib abs ind

L155 ANSWER 1 OF 8 COMPENDEX COPYRIGHT 2009 EEI on STN

AN 2008-3511493545 COMPENDEX Full-text

TI Non-platinum oxygen reduction electrocatalysts based on pyrolyzed transition metal macrocycles

AU Pylypenko Svitlana; Mukherjee Sanjoy; Olson Tim S.; Atanassov Plamen

CS Pylypenko Svitlana; Mukherjee Sanjoy; Olson Tim S.; Atanassov Plamen (Department of Chemical and Nuclear Engineering, University of New Mexico, 209 Farris Engineering Center, Albuquerque, NM 87131 (US))
 EMAIL: plamen@unm.edu

SO Electrochimica Acta (15 Nov 2008) Volume 53, Number 27, pp. 7875-7883, 37 refs.
 CODEN: ELCAAV ISSN: 0013-4686
 DOI: 10.1016/j.electacta.2008.05.047
 Published by: Elsevier Ltd; Elsevier Advanced Technology; The Boulevard

PUI S0013468608006841

CY United Kingdom

DT Journal; Article

LA English

SL English

ED Entered STN: 5 Jan 2009
Last updated on STN: 5 Jan 2009

AN 2008-3511493545 COMPENDEX Full-text

AB In this work pyrolyzed porphyrins were investigated for oxygen reduction electrocatalysis. **Pyrolysis** of non-supported cobalt and iron tetraphenylporphyrins in the temperature range of 500-800 °C generates high surface area catalysts with high degree of exposure of active sites to the reacting species. This is achieved through templating porphyrins on fumed amorphous **silica** that is **removed** after **pyrolysis** by etching with concentrated KOH. Detailed material characterization of the pyrolyzed materials is presented here. X-ray photoelectron spectroscopy (XPS) analysis of cobalt and iron porphyrins was used to elucidate the transformations of nitrogen, carbon, cobalt and iron species resulting from the heat treatment. Partial decomposition of the precursor material and formation of polymer-like network decorated by metal oxide particles are identified. Differences in the chemical composition of products of **pyrolysis** of FeTPP, CoTPP and Co/FeTPP are discussed. Transmission electron microscopy (TEM) imaging revealed the structure of the pyrolyzed porphyrins and was used to gain insight into the size of the metal crystals formed in the bulk. X-ray diffraction spectra (XRD) provided information about the type of crystals formed in the different formulations of the precursor porphyrins. Further, steady state polarization curves were obtained utilizing gas diffusion type electrodes in 0.5 M sulfuric acid and membrane electrode assembly (MEA) configurations under working PEM fuel cell conditions. This work revealed the necessity of the metal phases for the oxygen reduction process. .COPYRGT. 2008 Elsevier Ltd. All rights reserved.

AN 2008-3511493545 COMPENDEX Full-text

CC 741.3 Optical Devices and Systems; 801 Chemistry; 801.4 Physical Chemistry; 801.4.1 Electrochemistry; 802.2 Chemical Reactions; 741.1 Light and Optics; 803 Chemical Agents and Basic Industrial Chemicals; 804.1 Organic Compounds; 804.2 Inorganic Compounds; 933.1 Crystalline Solids; 933.1.1 Crystal Lattice; 804 Chemical Products Generally; 712.1.2 Compound Semiconducting Materials; 461.2 Biological Materials; 482.2 Minerals; 531 Metallurgy and Metallography; 533.1 Ore Treatment; 536 Powder Metallurgy; 421 Strength of Building Materials, Mechanical Properties; 539.3 Metal Plating; 547.1 Precious Metals; 549.3 Others, incl. Bismuth, Boron, Cadmium, Cobalt, Mercury, Niobium, Selenium, Silicon, Tellurium; 702.1 **Electric Batteries**; 702.2 Fuel Cells; 545.1 Iron

CT *X ray photoelectron spectroscopy; Catalysis; Cell membranes; Chemical reactions; Cobalt; Cracking (chemical); Crystal structure; Crystallography; Crystals; **Electric batteries**

; Electrocatalysis; Electrocatalysts; Electrochemistry; Electrolysis; Electrolytic reduction; Fuel cells; Iron; Iron analysis; Metallic compounds; Metallizing; Metals; Molecular orbitals; Molecular spectroscopy; Nitrogen; Nonmetals; Oxygen; Photoelectron spectroscopy; Platinum; Platinum metals; Porphyrins; Powders; ~~Pyrolysis~~; Silica; Silicate minerals; Silicon compounds; Sulfuric acid; Transition metals; X ray analysis

ST Active sites; Amorphous silica; Chemical compositions; Concentrated KOH; Gain insight; Gas-diffusion; Heat-treatment; High surface area; Iron porphyrins; Iron species; Macrocycles; Material characterizations; Membrane-electrode-assembly; Metal crystals; Metal oxide particles; Metal phases; Non-platinum; Non-supported; Oxygen reduction; Oxygen reduction process; Oxygen reductions; Partial decompositions; PEM fuel cells; Polymer electrolyte fuel cells; Precursor materials; Pyrolyzed materials; Pyrolyzed porphyrins; Reacting species; Steady-state polarization curves; Temperature ranges; Templating; Tetraphenylporphyrins; transmission electron microscopy (TEM); X-ray diffraction; X-ray photoelectron spectroscopy XPS

ET C; H*K*O; KOH; K cp; cp; O cp; H cp; Fe*P*T; FeTPP; Fe cp; T cp; P cp; Co*P*T; CoTPP; Co cp; Co

L155 ANSWER 2 OF 8 COMPENDEX COPYRIGHT 2009 EEI on STN

AN 2004-078013765 COMPENDEX Full-text

TI Capacitance properties of ordered porous carbon materials prepared by a templating procedure

AU Vix-Guterl C.; Saadallah S.; Reda M.; Jurewicz K.; Frackowiak E.; Parmentier J.; Patarin J.; Beguin F.

CS Vix-Guterl C.; Saadallah S.; Reda M. (Inst. de Chim. des Surf./Interfaces, CNRS, 15 rue Jean Starcky, B.P. 2488, 68057 Mulhouse, Cedex (FR)); Reda M.; Parmentier J.; Patarin J. (Lab. de Mat. Mineraux, Ecl. Natl. Sup. de Chim. de Mulhouse, Universite de Haute Alsace, 3 rue Alfred Werner, 68093 Mulhouse, Cedex (FR)); Jurewicz K.; Frackowiak E. (Poznan University of Technology, ul. Piotrowo 3, 60-965 Poznan (PL)); Beguin F. (Ctr. de Rech. sur la Matiere Divisee, 1B rue de la Ferrollerie, 45071 Orleans, Cedex 2 (FR))

EMAIL: c.vix@uha.fr

SO Journal of Physics and Chemistry of Solids (Feb 2004) Volume 65, Number 2-3, pp. 287-293, 30 refs.
CODEN: JPCSAW ISSN: 0022-3697
DOI: 10.1016/j.jpcs.2003.10.024
Published by: Elsevier Ltd

PUI S0022369703003858

CY United Kingdom

DT Journal; (Conference Paper); Experimental

LA English

SL English
ED Entered STN: 4 Jan 2009
Last updated on STN: 4 Jan 2009
AN 2004-078013765 COMPENDEX Full-text
AB The electrochemical performance of carbon materials with a highly ordered nanoporous structure is investigated in two-electrode supercapacitors. The materials were prepared by a templating procedure using a silica matrix (type MCM-48 or SBA-15) with an organized porosity in which carbon was inserted, either by chemical vapor decomposition of propylene or by impregnation with a sucrose solution followed by carbonisation. After the ~~removal~~ of silica, a micro-mesoporous carbon residue is recovered which displays an uniform pore size distribution. Such a well-defined nanostructure is interesting for a fundamental study of the double layer capacitance behavior. The performance of supercapacitors built with electrodes prepared from the templated carbon was tested in acidic, alkaline and organic electrolyte solutions. High values of capacitance in aqueous and organic media were obtained with a rectangular shape of the voltammograms over a wide range of scan rates indicating a quick charge propagation. Especially, the templated carbons prepared by the impregnation of sucrose in MCM-48 display high capacitance values due to the formation of an adequate micro-mesoporous network during their formation. A marked shift of capacitance drop at higher values of frequency is clearly observed for the materials rich in mesopores; the mesopores make easier the diffusion of the ions to the active surface. .COPYRGT. 2003 Elsevier Ltd. All rights reserved.
AN 2004-078013765 COMPENDEX Full-text
CC 931.3 Atomic and Molecular Physics; 931.2 Physical Properties of Gases, Liquids and Solids; 822.3 Food Products; 804.2 Inorganic Compounds; 804.1 Organic Compounds; 804 Chemical Products Generally; 803 Chemical Agents and Basic Industrial Chemicals; 802.2 Chemical Reactions; 704.1 Electric Components; **702 Electric Batteries and Fuel Cells**; 701.1 Electricity, Basic Concepts and Phenomena
CT *Capacitance; Activated carbon; Carbonization; Charge transfer; Chemical vapor deposition; Diffusion; Electrodes; Electrolytes; Impregnation; Pore size; Porosity; Porous materials; Propylene; **Pyrolysis**; Silica; Sugar (sucrose); X ray diffraction analysis
ST Capacitance drop; Chemical vapor infiltration (CVI); Surface areas

=> d 1155 3 full

DNC C2005-205040 [69]
 DNN N2005-554461 [69]
 TI **Recovery of silica** present in separators located
 between elements of lead-acid **batteries** involves removing
 lead compounds; separating polyvinyl chloride and fabrics from
 polyethylene; pyrolyzing polyethylene followed by oxidation
 DC A35; E36; J01; L03; X16
 IN MODICA G
 PA (KAND-N) KANDY SA; (MILL-N) MILLBROOK LEAD RECYCLING TECHNOLOGIES
 LTD; (MILL-N) MILLBROOK LEAD RECYCLING TECHNOLOGIES LT
 CYC 107
 PI WO 2005081356 A1 20050901 (200569)* EN 17[3]
 EP 1721358 A1 20061115 (200675) EN
 CN 1930727 A 20070314 (200752) ZH
 EP 1721358 B1 20071107 (200778) EN
 US 20070280871 A1 20071206 (200781) EN
 DE 602005003209 E 20071220 (200804) DE
 ES 2297665 T3 20080501 (200837) ES
 DE 602005003209 T2 20080828 (200859) DE
 RU 2359370 C2 20090620 (200945) RU
 CN 100474691 C 20090401 (200969) ZH
 ADT WO 2005081356 A1 WO 2005-IB291 20050203; CN 1930727 A CN
 2005-80008153 20050203; DE 602005003209 E DE 2005-602005003209
 20050203; DE 602005003209 T2 DE 2005-602005003209 20050203; EP
 1721358 A1 EP 2005-702435 20050203; EP 1721358 B1 EP 2005-702435
 20050203; DE 602005003209 E EP 2005-702435 20050203; ES 2297665 T3
 EP 2005-702435 20050203; DE 602005003209 T2 EP 2005-702435 20050203;
 EP 1721358 A1 PCT Application WO 2005-IB291 20050203; EP 1721358 B1
 PCT Application WO 2005-IB291 20050203; US 20070280871 A1 PCT
 Application WO 2005-IB291 20050203; DE 602005003209 E PCT
 Application WO 2005-IB291 20050203; DE 602005003209 T2 PCT
 Application WO 2005-IB291 20050203; RU 2359370 C2 PCT Application WO
 2005-IB291 20050203; RU 2359370 C2 RU 2006-132400 20050203; US
 20070280871 A1 US 2007-589282 20070418; CN 100474691 C CN
 2005-80008153 20050203
 FDT DE 602005003209 E Based on EP 1721358 A; ES 2297665 T3
 Based on EP 1721358 A; DE 602005003209 T2 Based on EP 1721358
 A; EP 1721358 A1 Based on WO 2005081356 A; EP 1721358 B1
 Based on WO 2005081356 A; DE 602005003209 E Based on WO 2005081356
 A; DE 602005003209 T2 Based on WO 2005081356 A; RU 2359370 C2
 Based on WO 2005081356 A
 PRAI CH 2004-196 20040211
 IPCI C01B0033-00 [I,C]; C01B0033-00 [I,C]; C01B0033-113 [I,A];
 C01B0033-113 [I,A]; C25B0015-00 [I,A]; C25B0015-00 [I,C];
 C25B0015-00 [I,A]; C25B0015-00 [I,C]; H01M0010-06 [I,A]; H01M0010-06
 [I,C]; H01M0010-54 [I,A]; H01M0010-54 [I,C]; H01M0010-54 [I,A];
 H01M0010-54 [I,C]; H01M0010-54 [I,A]; H01M0010-54 [I,C]

IPCR C01B0033-00 [I,C]; C01B0033-113 [I,A]; C01B0033-12 [I,A];
C25B0015-00 [I,A]; C25B0015-00 [I,C]; H01M0010-06 [N,A]; H01M0010-06
[N,C]; H01M0010-54 [I,A]; H01M0010-54 [I,C]
EPC C01B0033-12; H01M0010-54
ICO T01M0010:06
NCL NCLM 423/337.000
AB WO 2005081356 A1 UPAB: 20090720

NOVELTY - **Recovery** of **silica** present in the separators located between the elements of lead-aid **batteries** involves removing lead compounds from plastic material; separating granular plastic from thin plastic (polyvinyl chloride (PVC) and fabrics from polyethylene with silica filler) by drawing them up in a flow of air by using shape effect; pyrolyzing the polyethylene with silica filler; and oxidizing **pyrolysis** residue to remove carbonaceous residue.

DETAILED DESCRIPTION - **Recovery** of **silica** present in the separators located between the elements of lead-aid **batteries** involves:

- (1) **washing** heavy plastics to remove lead compounds and other foreign bodies;
- (2) separating plastics from a **washing** solution;
- (3) recovering lead and regenerating the **washing** solution;
- (4) **rinsing** of the plastics;
- (5) drying of the plastics;
- (6) separation of granular plastics from thin plastics (polyethylene with silica filler, polyvinyl chloride (PVC), fabrics) by drawing them up in a flow of air by using shape effect;
- (7) separating the PVC and fabrics from the polyethylene with silica filler fragmentation;
- (8) pyrolyzing the polyethylene with silica filler;
- (9) cracking of the **pyrolysis** gases and vapors to reduce their molecular weight and render them more suitable for handling and combustion to provide heat necessary for **pyrolysis**;
- (10) oxidizing the **pyrolysis** residue to remove carbonaceous residues and **recover** the **silica**;
- (11) pyrolysing the mixture of PVC and fabrics in presence of alkaline substances;
- (12) oxidizing the residue from the **pyrolysis** of PVC and fabrics with production of inert ashes.

USE - For **recovery** of **silica** present in the separators located between the elements of lead-aid **batteries** (claimed).

ADVANTAGE - The process **recovers** the quality microporous **silica** and some types of valuable plastics present in the mixture of heavy plastics materials; and generates a sufficient quantity of energy to make the **silica recovery** process self-sustaining.

TECH INORGANIC CHEMISTRY - Preferred Process: The heavy plastics are washed with an aqueous solution containing compounds capable of dissolving lead (II) compounds and substances capable of reducing

lead (IV) to lead (II) at ambient temperature and boiling point. A spent **washing** solution is regenerated by treating it with alkali metal or alkaline earth sulfides or by treating it with metals which are less noble than lead making use of the cementation reaction which replaces the lead in solution with cations of these metals. The granular plastics are separated from the thin plastics by drawing up in a flow of air by using shape effect. The polyethylene is separated from the PVC and fabrics by using lesser brittleness of polyethylene in comparison with the other materials in a machine comprising a perforated cylinder in which numerous rubber or other suitable material rotate scraping the inner surface of the cylinder. The polyethylene with quality silica filler is pyrolyzed for 10 - 60 (preferably 20 - 45) minutes at 300 - 600 (preferably 470 - 530)degreesC. The **pyrolysis** gases and vapors are passed to a catalytic cracking reactor. The **pyrolysis** residue is oxidized under controlled temperature conditions i.e. at 400 - 600 (preferably 450 - 500)degreesC, in the presence of gaseous mixture comprising an inert gas and oxygen (3 - 7%).

ORGANIC CHEMISTRY - Preferred Process: The heavy plastics are washed with an aqueous solution containing compounds capable of dissolving lead (II) compounds and substances capable of reducing lead (IV) to lead (II) at ambient temperature and boiling point. A spent **washing** solution is regenerated by treating it with alkali metal or alkaline earth sulfides or by treating it with metals which are less noble than lead making use of the cementation reaction which replaces the lead in solution with cations of these metals. The granular plastics are separated from the thin plastics by drawing up in a flow of air by using shape effect. The polyethylene is separated from the PVC and fabrics by using lesser brittleness of polyethylene in comparison with the other materials in a machine comprising a perforated cylinder in which numerous rubber or other suitable material rotate scraping the inner surface of the cylinder. The polyethylene with quality silica filler is pyrolyzed for 10 - 60 (preferably 20 - 45) minutes at 300 - 600 (preferably 470 - 530)degreesC. The **pyrolysis** gases and vapors are passed to a catalytic cracking reactor. The **pyrolysis** residue is oxidized under controlled temperature conditions i.e. at 400 - 600 (preferably 450 - 500)degreesC, in the presence of gaseous mixture comprising an inert gas and oxygen (3 - 7%).

ABEX EXAMPLE - A mixture of heavy plastics materials (100 kg) obtained from the process of breaking up spent lead-aid **batteries** was treated at 60degreesC with sodium acetate solution (300 g/l) at pH 5.5 through the addition of acetic acid. Hydrogen peroxide (35%) was added to the solution to reduce the lead (IV) oxide. The mass was stirred for 30 minutes; after treatment the plastics materials were separated out by filtration and the solution was regenerated by

treatment with metallic zinc in granules in order to selectively cement the lead (II) ions onto the zinc and replace them by zinc ions in solution. The plastics were rinsed with water, dried in a flow of hot air and subjected to a separation process based on the shape effect. The light plastics (flakes of polyethylene with silica filler, flakes of PVC and fabrics) drawn up by the flow of air were fed to apparatus comprising a perforated cylinder and a rotating shaft bearing many arms of rubber or other suitable material which scraped the inner surface of the cylinder. At the end of the separation treatment diaphragms (50 kg) comprising polyethylene with silica filler were recovered with a separation yield of approximately 80%. The PVC content of this fraction was less than 0.1%. The diaphragms comprising polyethylene with silica filler were pyrolyzed at 500degreesC. The pyrolysis gases and vapors were passed through a catalytic cracking reactor filled with an acid zeolite at 650degreesC and then passed to combustion chamber. A flow of nitrogen containing 5% oxygen was introduced to oxidize the carbonaceous residue deposited on silica and white colored silica having a surface area 148 m2/g was recovered.

FS CPI; EPI

MC CPI: A08-R06A; A10-E05A; A11-C; A11-C07; A12-E06; E11-Q01A; E31-P01;
J01-X01B; L03-E01A; L03-E06

EPI: X16-M

=> d 1155 4-8 bib abs hitind

L155 ANSWER 4 OF 8 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2009:1151574 HCAPLUS Full-text

DN 151:452986

TI Preparation of porous carbon material for energy storage

IN Hou, Chaohui; He, Binhong; Yi, Jianmin; Zhou, Ningbo; Yan, Jianhui;
Tang, Kewen; Yang, Jiawei

PA Hunan Institute of Science and Technology, Peop. Rep. China; Yueyang
City Chirui Electronic Science and Technology Co., Ltd.

SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 14pp.

CODEN: CNXXEV

DT Patent

LA Chinese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	
PI	CN 101531359	A	20090916	CN 2009-10043229	20090428
PRAI	CN 2009-10043229		20090428		

AB The preparation comprises (1) using silica with proper pore size and pore volume as template and intermediate-phase asphalt as C precursor, (2) mixing the both by grinding, (3) dissolving proper intermediate-phase asphalt in acetone, THF, etc., vacuum drying the organic template at 100° for 1, immersing in the C precursor solution for 0.5h, filtering, vacuum drying for 1h, immersing in C precursor solution for 0.5, repeating for several times, (4) carrying out heat treatment for the sample from step (1) and step (2) by heating to 300° at heating speed 2-5°/min in 99.99% nitrogen protection in a tubular furnace, holding for 0.5-10h, heating to 900° at heating speed 5-20°/min, holding for 1-1h, cooling to room temperature, (5) the post treatment. The post treatment treating the sample prepared from step (4) with 30% HF, removing silica template, filtering, washing with water to be neutral, drying at 100°, and carrying out heat treatment at 1500, 1800, 2400, and 2600° resp. for adjusting graphitization degree of the C material. The ordered silica template includes mesoporous silica such as SBA-15, MCM-41, MCM-48, and KIT-6 with average particle size 4-30nm. In the invention, the raw materials are easy to obtain, and the process is simple. The C material can be used as electrode materials of super capacitors, with weight sp. capacity 220F/g, area sp. capacity 45μF/cm², and good high-power working performances.

CC 52-3 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49

ST prepn porous carbon material energy storage; lithium ion battery neg electrode super capacitor

IT MCM zeolites
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(MCM-48, mesoporous, template; preparation of porous carbon as energy storage material used for supercapacitor electrode and lithium ion battery neg. electrode)

IT Secondary batteries
(lithium; preparation of porous carbon as energy storage material used for supercapacitor electrode and lithium ion battery neg. electrode)

IT Zeolite MCM-41
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(mesoporous, template; preparation of porous carbon as energy storage material used for supercapacitor electrode and lithium ion battery neg. electrode)

IT Battery electrodes
Capacitors

Catalyst supports

Fuel cells

Porous materials

(preparation of porous carbon as energy storage material used for supercapacitor electrode and lithium ion **battery** neg. electrode)

IT Asphalt

RL: PEP (Physical, engineering or chemical process); PROC (Process)
(preparation of porous carbon as energy storage material used for supercapacitor electrode and lithium ion **battery** neg. electrode)

IT Silica gel

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(template; preparation of porous carbon as energy storage material used for supercapacitor electrode and lithium ion **battery** neg. electrode)

IT 7631-86-9, SBA-15, uses

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(mesoporous, template; preparation of porous carbon as energy

storage

material used for supercapacitor electrode and lithium ion **battery** neg. electrode)

IT 7440-44-0P, Carbon, uses

RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(preparation of porous carbon as energy storage material used for supercapacitor electrode and lithium ion **battery** neg. electrode)

IT 14808-60-7, Quartz, uses

RL: NUU (Other use, unclassified); USES (Uses)
(preparation of porous carbon as energy storage material used for supercapacitor electrode and lithium ion **battery** neg. electrode)

IT 67-64-1, Acetone, uses 109-99-9, Tetrahydrofuran, uses

1310-58-3, Potassium hydroxide, uses 7664-39-3, Hydrofluoric acid, uses 7727-37-9, Nitrogen, uses

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(preparation of porous carbon as energy storage material used for supercapacitor electrode and lithium ion **battery** neg. electrode)

AN 2009:1030335 HCAPLUS Full-text
 DN 151:363122
 TI Method for preparing carbon-encapsulated Si-Sn alloy anode for lithium ion **battery** by reduction-sintering under inert gas protection
 IN Li, Qianqian; Shen, Guopei
 PA Guangzhou Hongsen Material Co., Ltd., Peop. Rep. China
 SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 17pp.
 CODEN: CNXXEV
 DT Patent
 LA Chinese
 FAN.CNT 1

	PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
PI	CN 101510601	A	20090819	CN 2009-10038274	200903 27

PRAI CN 2009-10038274 20090327

AB A method for preparing Si-Sn alloy anode for lithium ion **battery** comprises (1) mixing alkali (such as ammonia water or urea) solution, alc. (such as methanol, ethanol, propanol, etc.) and water for 0.5-2 h, adding silicate (such as tetra-Bu silicate, tetra-Me silicate, tetra-Et silicate, etc.), stirring for 3-10 h to obtain suspension, centrifuging, **washing** with deionized water, and drying to obtain silica spheres; (2) mixing the obtained silica spheres with stannate (such as sodium stannate, potassium stannate or magnesium stannate) solution and alkali substance (such as urea, ammonia water or sodium hydroxide), reacting under 1-3 atm at 100-500° for 2-12 h, and cooling to obtain tin oxide-coated silica spheres; (3) mixing the obtained coated silica spheres with alkali (sodium hydroxide, potassium hydroxide or ammonia water) solution, reacting for 2-20 h to **remove** partial **silica**, centrifuging to sep. insol. substance, cleaning, drying to obtain silicon-tin oxide, mixing silicon-tin oxide with saccharide (such as sucrose, glucose, maltose or fructose) aqueous solution, reacting under 1-3 atm at 200-700°C for 8-20 h to obtain suspension, filtering, cleaning, and drying to obtain carbon encapsulated silicon-tin oxide; and (4) performing reducing reaction under inert gas (such as argon, nitrogen or helium) protection at 500-1,000°C for 2-15 h, and cooling to obtain carbon-coated Si-Sn alloy. The obtained alloy anode has high specific capacity and good cycling performance. The method has the advantages of simple process, accessible raw material, lowered reaction temperature, shortened reaction time and reduced energy consumption, and can prevent the volume expansion of the alloy neg. nanomaterial.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST carbon encapsulated silicon tin alloy anode lithium ion

battery

- IT Controlled atmospheres
(inert; method for preparing carbon-encapsulated Si-Sn alloy anode for lithium ion battery by reduction-sintering under inert gas protection)
- IT Secondary batteries
(lithium; method for preparing carbon-encapsulated Si-Sn alloy anode for lithium ion battery by reduction-sintering under inert gas protection)
- IT Battery anodes
Reduction
Sintering
(method for preparing carbon-encapsulated Si-Sn alloy anode for lithium ion battery by reduction-sintering under inert gas protection)
- IT Silicates
RL: RCT (Reactant); RACT (Reactant or reagent)
(method for preparing carbon-encapsulated Si-Sn alloy anode for lithium ion battery by reduction-sintering under inert gas protection)
- IT 7440-44-0P, Carbon, uses 51844-78-1P
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(method for preparing carbon-encapsulated Si-Sn alloy anode for lithium ion battery by reduction-sintering under inert gas protection)
- IT 57-13-6, Urea, uses 1336-21-6, Ammonia water
RL: NUU (Other use, unclassified); USES (Uses)
(method for preparing carbon-encapsulated Si-Sn alloy anode for lithium ion battery by reduction-sintering under inert gas protection)
- IT 50-99-7, Glucose, reactions 57-48-7, Fructose, reactions
57-50-1, Sucrose, reactions 69-79-4, Maltose 11099-06-2, Ethyl silicate 12002-26-5, Methyl silicate 12058-66-1, Sodium stannate 12142-33-5, Potassium stannate 18165-73-6, Diethyl silicate 37317-24-1, Butyl silicate 39467-03-3, Magnesium stannate
RL: RCT (Reactant); RACT (Reactant or reagent)
(method for preparing carbon-encapsulated Si-Sn alloy anode for lithium ion battery by reduction-sintering under inert gas protection)

L155 ANSWER 6 OF 8 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2002:116591 HCAPLUS Full-text

DN 136:234617

TI Anode performance of periodic nanoporous carbon in secondary lithium-ion batteries

AU Take, Hiroyoshi; Matsumoto, Tetsuya; Yoshino, Katsumi
 CS Department of Electronic Engineering, Graduate School of
 Engineering, Osaka University, Suita, Osaka, 565-0871, Japan
 SO Denki Zairyo Gijutsu Zasshi (2001), 10(2), 199-202
 CODEN: DZGZFE; ISSN: 0918-9890
 PB Denki Zairyo Gijutsu Kondankai
 DT Journal
 LA English
 AB The electrochem. characteristics of periodic nanoporous carbon
 materials with various heat treatment temps. (HTT) for Li ion
 secondary **battery** applications were studied. Periodic nanoporous
 carbons with three-dimensional periodicity at optical wavelengths
 were prepared using the method that the pristine products
 infiltrating starting materials into the voids in synthetic opals
 were pyrolyzed in a high-purity Ar atmospheric for carbonization of
 samples and subsequently **removing** the SiO₂ spheres by immersing into
 the aqueous solution of hydrofluoric acid. Li ion intercalation to a
 sample corresponds to a discharge process, while the deintercalation
 is a charge process. Results showed that the electrode made of
 pyrolyzed periodic nanoporous carbon showed the good stability and
 relatively high Coulombic efficiency. The third charge-discharge
 capacities of pyrolyzed samples were dependent on HTTs. The
 reversible capacity of pyrolyzed sample with a HTT of about 700° was
 the highest and the charge-discharge capacity of samples could be
 improved by **pyrolysis**. The periodic nanoporous carbon can be used as
 an electrode active materials in rechargeable **batteries**.
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST anode nanoporous carbon lithium ion secondary **battery** heat
 treatment
 IT **Battery** anodes
 Heat treatment
 (anode performance of periodic nanoporous carbon in secondary
 lithium-ion **batteries**)
 IT Secondary **batteries**
 (lithium, anodes; anode performance of periodic nanoporous carbon
 in secondary lithium-ion **batteries**)
 IT 17341-24-1, Lithium(1+), uses
 RL: DEV (Device component use); USES (Uses)
 (carbon-containing, anodes; anode performance of periodic
 nanoporous
 carbon in secondary lithium-ion **batteries**)
 IT 7440-44-0, Carbon, uses
 RL: DEV (Device component use); USES (Uses)
 (nanoporous, lithium-containing, anodes; anode performance of
 periodic nanoporous carbon in secondary lithium-ion
batteries)
 RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L155 ANSWER 7 OF 8 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 1962:59102 HCAPLUS Full-text

DN 56:59102

OREF 56:11233a-b

TI Removing silicon oxide from calcined
bauxites with sodium hydroxide

IN Klan, Premysl

DT Patent

LA Unavailable

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	

PI	CS 97901	19610115	CS	195909 19
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AB A process is described, the main feature of which is a countercurrent diffusion **battery** in which bauxite calcined at 940-70° is crushed and extracted with 15-25% NaOH at 85-95° at a ratio bauxite:NaOH 1:10. The SiO₂-free bauxite in the last step does not require **washing** and filtration and can be immediately worked up by the Bayer process. Thus, bauxite containing SiO₂ 8.84 and Al₂O₃ 60.67%, calcined 1.5 h. at 950, and extracted in a 12member **battery** at 90° with 15-25% NaOH for 6 h. as described above, gave a product containing SiO₂ 3.10 and Al₂O₃ 62.02%. Calcination of bauxite at 940-70° brings about conversion of a part of Al₂O₃ to form, which is practically insol. in NaOH at ≤95°.

CC 15 (Industrial Inorganic Chemicals)

IT Bauxite
(silica removal from, by leaching with NaOH)

L155 ANSWER 8 OF 8 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 1939:39677 HCAPLUS Full-text

DN 33:39677

OREF 33:5603e-i,5604a-i,5605a

TI The production of aluminum oxide and alkalies from nephelite by the alkali method

AU Strokov, F. N.

SO Trans. State Inst. Applied Chem. (U. S. S. R.) (1936), No. 29, 7-272
From: Chem. Zentr. 1937, II, 3055-6

DT Journal

LA Unavailable

AB cf. C. A. 30, 7288.3. The deposits of nephelite in Chibiny and the composition of the mineral are described. The nephelite residues obtained in the concentration of nephelite-apatite ores by flotation are the most suitable raw material for the production of Al₂O₃ in

Russia. Further concentration of these residues gave a product containing 90-93% nephelite. In expts. on the production of Al_2O_3 by sintering urtite with soda and limestone, the influence of composition within the limits of mol. ratios $\text{CaO}/\text{SiO}_2 = 1-2$ and $\text{Na}_2\text{CO}_3/\text{Al}_2\text{O}_3 = 0.5-2.2$, and the influence of the sintering temperature ($850-1200^\circ$), and the duration of the sintering (1-4 hrs.) were studied. In the leaching of the sintered mass the influence of extracting agents (water, aluminate solns., etc.) temperature, and other factors was investigated. The 3-component layers of the above composition were not suitable as a basis for developing a com. process, because at most only 70-5% of the Al_2O_3 and only 50-60% of the alkalies can be extracted. The mixture is not suitable for sintering in revolving furnaces, because at about $850-900^\circ$ it forms a pasty mass. In an investigation of the production of Al_2O_3 and alkalies from the urtite-limestone mixture, conditions recommended for sintering are: 2 mols. CaCO_3 to 1 mol. SiO_2 , temperature $1180-1200^\circ$, fineness of 175 mesh, and a homogeneity of the mixture permitting variations in CaCO_3 content of only $\pm 2\%$. A soda solution containing 0.5 mol. CaCO_3 per mol. Al_2O_3 in the sinter mass is recommended for leaching; the material should be 20-80-mesh and a 30-min. treatment is required. The solid:liquid ratio should be 1:3 with 4 cold washings of 10-min. duration. Under these conditions 75-85% of the Al_2O_3 and 75-80% of the alkalies were extracted. A MgO content up to 3% was practically without effect on the extraction; when the MgO content was higher, the mass began to fuse at lower temps. Mixts. prepared in the wet way or by briquetting gave sinter masses which behaved just as the pulverized mixts. Urtite fused at $1140-50^\circ$; the nephelite concentrate began to fuse at 1250° . The fusion temperature of the urtite mixture increased with increasing CaO content from 1.75 to 2.5 mols. CaO per mol. SiO_2 in the urtite. For mixts. of normal composition (mols. $\text{CaO}/\text{SiO}_2 = 2$) the sintering temperature should not be above 1220° . Leaching of the sinter mass with a 3:1 solution of Na_2CO_3 and K_2CO_3 gave practically the same results as leaching with soda alone. The addition of 20-25% NaHCO_3 to the soda solution had slight effect. Countercurrent leaching of the urtite mass with a solid:liquid ratio of 1:3 gave aluminate solns. containing 50-5 g. $\text{Al}_2\text{O}_3/\text{l.}$ At solid:liquid ratios of 1:2, 1.5:2 and 1:1 solns. were obtained which contained up to 160 g. $\text{Al}_2\text{O}_3/\text{l.}$ These solns., however, could be separated from the sludge only with difficulty. The extraction of the Al_2O_3 amounted to 75%, that of the alkalies to 70% and less, depending upon the solid:liquid ratio. Double leaching, with the addition of soda to the first and 2nd concentrated solution, with a solid:liquid ratio of 1:3, gave aluminate solns. containing about 100 g. $\text{Al}_2\text{O}_3/\text{l.}$ with an Al_2O_3 extraction of 77-81% and an alkali extraction of 74-9%. Washing the sludge with hot liquor yielded about 4% more Al_2O_3 and alkalies; the aluminate solns. were richer in SiO_2 ($\text{Al}_2\text{O}_3/\text{SiO}_2 = 20$) than those

obtained by cold **extraction** ($\text{Al}_2\text{O}_3/\text{SiO}_2 = 70$). Leaching with the Dorr classifier to sep. sand, sludge, and solution gave results identical with those obtained in the laboratory Fractional extraction (treatment of the sinter mass with water, then with soda solution), to obtain a SiO_2 -poor and a SiO_2 -rich Al_2O_3 , was not satisfactory. Solns. containing 40-140 g./l. Al_2O_3 were the more stable the higher their alkali modulus. At room temps. aluminate solns. with an alkali modulus above 1.6 were practically stable for 2-3 days with a content in alkali carbonate up to 25% of the total alkali content. The decomposition of solns. with 10-80 g./l. Al_2O_3 was more rapid than that of more concentrated solns. (100-140 g./l.). In the first case an amorphous precipitate formed, which scarcely increased with time; in the 2nd a crystalline precipitate formed, the amount of which increased sharply. At $70-5^\circ$ the solns. were less stable than at room temperature At 150° (under pressure) 2-3% Al_2O_3 was formed in 4 hrs. as the result of decomposition Increasing the carbonate alkali to 34% of the total alkali lowered the stability of solns. with an alkali modulus of 1.4 and was practically without effect on those for which this value was 1.8. By boiling solns. containing 30-100 g./l. Al_2O_3 2-3 hrs. under normal pressure with CaO (10-20 g./l.), $\text{Ba}(\text{OH})_2$ (20-100 g./l.), and activated C (40-100 g./l.) the major portion of the SiO_2 (up to 85%) was removed from solution, but there was also a heavy loss of Al_2O_3 (20-25%). For solns. containing 100-125 g./l. Al_2O_3 and having a Na_2O normality of 1.7-0.9, the optimum conditions for **removing SiO_2** were boiling 1 hr. under a pressure of 7 atmospheric with 5 g./l. CaO ; the Al_2O_3 loss was 4.5%, the alkali loss 1-2%. For the same **removal of SiO_2** , solns. containing a higher concentration of Al_2O_3 required up to 25-30 g./l. CaO and 2-3 hrs. autoclaving; this increased the Al_2O_3 loss to 10-15%. Solns. containing more than 200 g./l. Al_2O_3 could not be satisfactorily freed from SiO_2 . A coarsely crystalline, readily filterable precipitate of $\text{Al}(\text{OH})_3$ was obtained under an optimum carbonation temperature of $95-8^\circ$, which must not fall below $70-75^\circ$ toward the end. The hydrate separated in coarser crystals from concentrated solns. (60 g./l. and over) than from dilute solns. When CO_2 was slowly bubbled through the solns., the crystalline hydrate formed the more readily the higher the concentration of Al_2O_3 . When the CO_2 was bubbled through rapidly an amorphous hydrate formed. The velocity of carbonation can be very large up to the point of formation of "hydrate milk," then it must be reduced. The production of Al_2O_3 and alkalies from the nephelite residues from the flotation of apatite does not differ technically from the com. process for the working up of urtite. The sintering temperature of the charge was $1150-1200^\circ$. The sintering temperature of the sinter mass of the nephelite concentrate was $1250-1300^\circ$; otherwise the process is analogous to the urtite process. At a temperature near the fusion temperature of the sinter mass the extraction of Al_2O_3 amounted to

85%. In order to obtain solns. with an Al₂O₃ concentration of about 100 g./l. and an Al₂O₃ and alkali extraction of 80% from the nephelite concentrate it was necessary to use a **battery** of 11 diffusers for the sinter mass. The leaching had to be done at temps. not below 60-70°. Carbonation of solns. containing 100 g./l. Al₂O₃ and 110-15 g./l. Na₂O was best done at 90°. Al₂O₃ and alkalies can be recovered from nephelite and solns. of higher concns. (up to 200 g./l. Al₂O₃) leached out by successive dilution with the mother liquor from the carbonation (after separation of solid NaHCO₃) up to a concentration of Al₂O₃ of 100 g./l. Semitech. expts. substantiated these results.

CC 18 (Acids, Alkalies, Salts, and Other Heavy Chemicals)

IT 7631-86-9, **Silica**
(removal of, from aluminates)

=> d 1156 1 bib abs ind

L156 ANSWER 1 OF 5 COMPENDEX COPYRIGHT 2009 EEI on STN

AN 2008-4711727207 COMPENDEX Full-text

TI Silica particles settling characteristics and removal performances of oxide chemical mechanical polishing wastewater treated by electrocoagulation technology

AU Wang Chih-Ta; Chou Wei-Lung; Chang Shih-Yu; Chen Li-Shien

CS Wang Chih-Ta (Department of Safety Health and Environmental Engineering, Chung Haw University of Medical Technology, Tainan Hsien 717 (TW)); Chou Wei-Lung; Chang Shih-Yu (Department of Safety Health and Environmental Engineering, HungKuang University, Sha-Lu, Taichung 433 (TW)); Chen Li-Shien (Department of Chemical and Materials Engineering, Cheng Shiu University, Kaohsiung, 833 (TW))

EMAIL: wlchou@sunrise.hk.edu.tw

SO Journal of Hazardous Materials (15 Jan 2009) Volume 161, Number 1, pp. 344-350, 33 refs.

CODEN: JHMAD9 ISSN: 0304-3894

DOI: 10.1016/j.jhazmat.2008.03.099

Published by: Elsevier

PUI S0304389408004792

CY Netherlands

DT Journal; Article

LA English

SL English

ED Entered STN: 5 Jan 2009

Last updated on STN: 5 Jan 2009

AN 2008-4711727207 COMPENDEX Full-text

AB The purpose of this study was to explore the feasibility of **removing silica** particles and reducing turbidity from oxide

chemical mechanical polishing (oxide-CMP) wastewater. Based on the dynamic characteristics of batch electrocoagulation, three operating stages (lag, reactive, and stabilizing) are proposed to identify the relationships among the zeta potential of the silica particles, solution turbidity, and the corresponding mean particle size of the silica. Experimental results show that the silica particles were destabilized and settled at the critical mean particle size, which was estimated to be above 520 nm after 10 min, and the corresponding turbidity removal mostly occurred during the reactive stage. Furthermore, the corresponding mean particle size varied from 520 to 1900 nm as the treatment time progressed from 10 to 20 min, which also occurred during the reactive stage. Several parameters, including different electrode pairs, electrolyte concentration, applied voltage, and the optimum condition of power input were investigated. Experimental results indicate that a Fe/Al electrode pair is the most efficient choice of the four electrode pair combinations in terms of energy consumption. The optimum electrolyte concentration and applied voltage were found to be 200 ppm NaCl and 30 V, respectively. .COPYRGT. 2008 Elsevier B.V. All rights reserved.

AN	2008-4711727207	COMPENDEX	<u>Full-text</u>
CC	801.4 Physical Chemistry; 801.4.1 Electrochemistry; 802.2 Chemical Reactions; 802.3 Chemical Operations; 803 Chemical Agents and Basic Industrial Chemicals; 804 Chemical Products Generally; 804.2 Inorganic Compounds; 812 Ceramics, Refractories and Glass; 931.2 Physical Properties of Gases, Liquids and Solids; 933.1 Crystalline Solids; 933.1.1 Crystal Lattice; 942.2 Electric Variables Measurements; 943.2 Mechanical Variables Measurements; 801.3 Colloid Chemistry; 445.1 Water Treatment Techniques; 452.2 Sewage Treatment; 452.3 Industrial Wastes; 452.4 Industrial Wastes Treatment; 453 Water Pollution ; 454.2 Environmental Impact and Protection; 482.2 Minerals; 531.2 Metallography; 604.2 Machining Operations; 702 Electric Batteries and Fuel Cells ; 714.2 Semiconductor Devices and Integrated Circuits; 741.1 Light and Optics; 761 Nanotechnology		
CT	*Chemical polishing; Chemical mechanical polishing; Chemical oxygen demand; Coagulation; Concentration (process); Electrolysis; Electrolytes; Grain size and shape; Nanotechnology; Optical properties; Oxides; Particle size; Polishing; Silica; Sodium chloride; Turbidity; Wastewater; Wastewater reclamation; Wastewater treatment; Water treatment; Zeta potential		
ST	Applied voltages; Dynamic characteristics; Electro coagulations; Electrocoagulation; Electrode pairs; Electrolyte concentrations; Energy consumption.; Mean particle sizes; Optimum conditions; Power inputs; Settling characteristics; Silica particles; Treatment times; Turbidity removal; Turbidity removals		
ET	Fe; Cl*Na; NaCl; Na cp; cp; Cl cp		

=> d 1156 2-5 bib abs hitind

L156 ANSWER 2 OF 5 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2008:572797 HCAPLUS Full-text

DN 148:596575

TI Method for manufacturing upper electrode of trench-type
radioisotopic micro-~~battery~~ by using photoresist stripping
process

IN Chu, Jinkui; Piao, Xianggao; Wang, Peichao

PA Dalian University of Technology, Peop. Rep. China

SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 9pp.

CODEN: CNXXEV

DT Patent

LA Chinese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	
PI	CN 101174484	A	20080507	CN 2007-10012855	20070914

PRAI CN 2007-10012855 20070914

AB The title process comprises using doped P-type silicon substrate, performing thermal oxidation on surface of the P-type silicon to obtain silica mask layer, performing photolithog. by using a mask, wet-etching to ~~remove silica~~ in trench region to form a widow for wet-etching silicon, wet-etching silicon with KOH to obtain inverse pyramid and V-shaped trench array, ~~removing the silica~~ mask layer and doping boron at back surface to manufacture P+-P back elec. field, doping phosphorus on front surface to form N-P node, spin-coating SU8 8 photoresist, performing photolithog. by using a mask to obtain a widow for doping N+ region, doping phosphorous again to obtain N+-N node, spin-coating BP212 pos. photoresist as sacrificial layer for removing SU8 8 photoresist, spin-coating SU8 8 photoresist, performing photolithog. by using a mask to obtain a window for sputtering upper electrode, sputtering metal, and stripping off excess metal outside metal electrode to obtain the final product. The process has the advantages of simple process, no ~~pollution~~, and good reproducibility.

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 52, 71, 76

ST photoresist stripping upper electrode radioisotope micro
~~battery~~

IT Doping

Electrodes
Etching
Nuclear **batteries**
Photolithography

(manufacture of upper electrode of trench-type radioisotopic
micro-

battery by using photoresist stripping process)

IT 7440-42-8, Boron, uses 7723-14-0, Phosphorus, uses
RL: MOA (Modifier or additive use); TEM (Technical or engineered
material use); USES (Uses)

(dopants; manufacture of upper electrode of trench-type
radioisotopic

micro-**battery** by using photoresist stripping process)

IT 1310-58-3, Potassium hydroxide, uses
RL: NUU (Other use, unclassified); USES (Uses)

(manufacture of upper electrode of trench-type radioisotopic
micro-

battery by using photoresist stripping process)

IT 7631-86-9, Silicon dioxide, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or
chemical process); PROC (Process); USES (Uses)

(manufacture of upper electrode of trench-type radioisotopic
micro-

battery by using photoresist stripping process)

IT 7440-21-3, Silicon, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical
or engineered material use); PROC (Process); USES (Uses)

(manufacture of upper electrode of trench-type radioisotopic
micro-

battery by using photoresist stripping process)

IT 180189-76-8, BP 212 221273-01-4, SU 8 (photoresist)
RL: TEM (Technical or engineered material use); USES (Uses)
(manufacture of upper electrode of trench-type radioisotopic
micro-

battery by using photoresist stripping process)

L156 ANSWER 3 OF 5 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2006:898619 HCAPLUS Full-text

DN 146:67826

TI Recovery of rare metals from spent lithium ion cells by hydrothermal
treatment and its technology assessment

AU Itoh, H.; Miyanaga, H.; Kamiya, M.; Sasai, R.

CS Division of Environmental Research, EcoTopia Science Institute,
Nagoya University, Japan

SO WIT Transactions on Ecology and the Environment (2006), 92(Waste
Management and the Environment III), 3-12

CODEN: WTEEAZ; ISSN: 1746-448X

PB WIT Press
 DT Journal
 LA English
 AB A novel cobalt recovering process from a cobalt-based cathode electrode in a lithium secondary cell was developed using a hydrothermal treatment combined with a pyrometallurgical technique. A cobalt-based cathode electrode was prepared by casting the mixture of LiCoO₂, poly(vinylidene fluoride) and conductive carbon black onto an Al foil, and this model electrode was used as a test sample. A hydrothermal treatment of the cathode sample was carried out using pure water as a solvent in the temperature range of 423–473 K for the duration of 0–40 h. The hydrothermal treatment at 473 K for more than 15 h led the cathode sample to the disintegration into powdery particles. By the hydrothermal treatment under the optimum condition at 473 K for 20 h, more than 99.9 mass% of Co and 98 mass% of Al in the cathode sample was reclaimed as a form of spinel type Co(Co_xAl_{2-x})O₄ (0 < x ≤ 2), and most of Li and F could be dissolved into the solution. Subsequently, metallic cobalt was successfully recovered from the spinel compound and carbon mixture by the pyrometallurgical treatment with additives for slag formation under a reducing condition at 1623 K for 5 h.

CC 60-4 (Waste Treatment and Disposal)
 Section cross-reference(s): 52, 54

ST recovery cobalt lithium ion **battery** waste hydrothermal treatment pyrometallurgical

IT Solid **wastes**
 (battery; recovery of cobalt from spent lithium ion cells by hydrothermal treatment combined with pyrometallurgical technique without corrosive gas generation and no utilization of toxic and expensive solvents)

IT Secondary **batteries**
 (lithium, waste; recovery of cobalt from spent lithium ion cells by hydrothermal treatment combined with pyrometallurgical technique without corrosive gas generation and no utilization of toxic and expensive solvents)

IT Dissolution
 Electrolysis
 Recycling
 Size reduction
 Slags
 Waste management
 (recovery of cobalt from spent lithium ion cells by hydrothermal treatment combined with pyrometallurgical technique without corrosive gas generation and no utilization of toxic and expensive solvents)

IT 471-34-1, Calcium carbonate, uses 7631-86-9, Silica, uses 24937-79-9, Poly(vinylidene fluoride)

RL: NUU (Other use, unclassified); USES (Uses)
(**recovery** of cobalt from spent lithium ion cells by
hydrothermal treatment combined with pyrometallurgical technique
without corrosive gas generation and no utilization of toxic and
expensive solvents)

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L156 ANSWER 4 OF 5 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 1999:101884 HCAPLUS Full-text

DN 130:141278

TI Transformation of an industrial waste from reduction of KMnO₄ to
electrolytic γ -MnO₂ (synthetic nsutite)

AU Hypolito, R.; Valarelli, J. V.; Netto, S. M.; Guttler, R. S.

CS Instituto de Geociencias, USP, Sao Paulo, 422-970, Brazil

SO Geochimica Brasiliensis (1997), 11(2), 207-211

CODEN: GEBREK; ISSN: 0102-9800

PB Sociedade Brasileira de Geoquimica

DT Journal

LA Portuguese

AB Some branches of industries (e.g., the pharmaceutical industry) use
potassium permanganate (KMnO₄) as an oxidizing agent in aqueous
media, in which Mn⁷⁺ is reduced to Mn²⁺ by forming amorphous crypto-
crystalline oxides beside small amount of Mn(OH)₂, a pyrochroite-like
compound. The reduced Mn-containing material is separated from the
mother solution by diatomite, Decalite or fuller's earth addition (as
conditioners) and submitted to a press filtering process. The
material retained in the filter is dark, very fine (90-95% less than
400#), with high humidity and alkaline, with bulk d. between 0.8 and
1.0 g/cm³, and with a variable composition (7 samples): 35-41% Mn; 7-
13% SiO₂; 2-15% K₂O. Nearly 80% of the silica content is retained by
the 400# sieve. Subsequent treatment with nitric acid solution (1.5-
2.5M) at 40-100°C for 20-60 min, promotes the solubility of almost
the total content of K₂O and the transformation of the Mn material
into γ -MnO₂, nsutite-like mineral, with depolarizing electrochem.
properties adequate to be used in dry cell **batteries** (Leclanche
type). The silica retained in the screening may be recycled and the
nitric solution containing K₂O may be the used to obtain KNO₃, an
important fertilizer.

CC 49-3 (Industrial Inorganic Chemicals)

Section cross-reference(s): 19, 52, 60, 63

ST manganese dioxide gamma **recovery** KMnO₄ redn waste
; nsutite synthetic **recovery** KMnO₄ redn waste;
potassium nitrate **recovery** KMnO₄ redn waste;
silica recovery KMnO₄ redn waste

IT 7697-37-2, Hydrogen nitrate, uses 7722-64-7, Potassium
permanganate

RL: NUU (Other use, unclassified); USES (Uses)
 (electrolytic γ -MnO₂ (synthetic nsutite) **recovery**
 from industrial **waste** in KMnO₄ reduction processes)

IT 7631-86-9P, Silica, preparation 7757-79-1P, Potassium nitrate,
 preparation
 RL: PUR (Purification or recovery); PREP (Preparation)
 (electrolytic γ -MnO₂ (synthetic nsutite) **recovery**
 from industrial **waste** in KMnO₄ reduction processes)

IT 12136-45-7, Dipotassium oxide, processes 18933-05-6, Manganese
 hydroxide
 RL: REM (Removal or disposal); PROC (Process)
 (electrolytic γ -MnO₂ (synthetic nsutite) **recovery**
 from industrial **waste** in KMnO₄ reduction processes)

IT 1313-13-9P, Manganese dioxide, preparation
 RL: PUR (Purification or recovery); PREP (Preparation)
 (γ -; electrolytic γ -MnO₂ (synthetic nsutite)
recovery from industrial **waste** in KMnO₄ reduction
 processes)

OSC.G 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1
 CITINGS)

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L156 ANSWER 5 OF 5 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 1996:457918 HCAPLUS Full-text

DN 125:91928

OREF 125:17235a,17238a

TI Electrochemical metal **recovery** from **waste**
 solutions

IN Horbez, Dominique; Kuntzburger, Frederic

PA Rhone-Poulenc Chimie SA, Fr.

SO PCT Int. Appl., 21 pp.

CODEN: PIXXD2

DT Patent

LA French

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	WO 9615988	A1	19960530	WO 1995-FR1535	199511 21
W:	AM, AU, BB, BG, BR, BY, CA, CN, CZ, EE, FI, GE, HU, JP, KG,				
	KP, KR, KZ, LK, LR, LT, LV, MD, MG, MK, MN, MX, NO, NZ, PL,				
	RO, RU, SG, SI, SK, TJ, TT, UA, US, UZ, VN				
RW:	KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR,				
	IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN,				

	ML, MR, NE, SN, TD, TG				
	FR 2727133	A1	19960524	FR 1994-14123	19941121
	FR 2727133	B1	19961220		
	AU 9642634	A	19960617	AU 1996-42634	19951121
	BR 9510066	A	19971230	BR 1995-10066	19951121
PRAI	FR 1994-14123	A	19941121		
	WO 1995-FR1535	W	19951121		
AB	A method for processing a metal-containing solution having a pH no higher than 14 in an electrolytic cell in which the cathode includes a fibrous web produced from a mixture of fibers with at least one fraction consisting of elec. conductive fibers and a binder selected from fluoropolymers (e.g., a mixture of polytetrafluoroethylene, carbon fibers, sodium chloride, and precipitated silica), said fibrous web being deposited on an elec. conductive porous support. Said cathode may also be combined with a diaphragm or a membrane.				
IC	ICM C02F001-46				
	ICS C25C007-02; C25D021-20				
CC	54-2 (Extractive Metallurgy)				
	Section cross-reference(s): 60				
IT	Galvanization				
	(electrochem. metal recovery from waste solns.)				
IT	Metals, preparation				
	RL: PUR (Purification or recovery); PREP (Preparation)				
	(electrochem. metal recovery from waste solns.)				
IT	Scrubbing				
	(spent liquor; electrochem. metal recovery from waste solns.)				
IT	Catalysts and Catalysis				
	(spent; leaching solution; electrochem. metal recovery from waste solns.)				
IT	Batteries, secondary				
	(waste acid; electrochem. metal recovery from waste solns.)				
IT	Wastewater treatment				
	(electrochem., electrochem. metal recovery from waste solns.)				
IT	7439-88-5, Iridium, uses 7440-06-4, Platinum, uses 7440-32-6, Titanium, uses				
	RL: DEV (Device component use); USES (Uses)				

(anode; electrochem. metal recovery from waste solns.)

IT 12597-68-1, Stainless steel, uses
 RL: DEV (Device component use); USES (Uses)
 (cathode support; electrochem. metal recovery from waste solns.)

IT 7440-44-0, Carbon, uses 7631-86-9, Silica, uses
 7647-14-5, Sodium chloride, uses 9002-84-0,
 Polytetrafluoroethylene 11138-66-2, Xanthan gum
 RL: DEV (Device component use); USES (Uses)
 (electrochem. metal recovery from waste solns.)

IT 7440-50-8P, Copper, preparation
 RL: PUR (Purification or recovery); PREP (Preparation)
 (electrochem. metal recovery from waste solns.)

OSC.G 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

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